unpatentable over Stayt, Jr., et al., as applied to claims 1-12, and further in view of Eda et al. (U.S. Patent No. 5,438,579).

The foregoing objections and rejections are respectfully traversed.

Claims 1, 9, 12, 18, 21, 22, 23, and 24 have been amended. Claims 1-24 are pending in the application; claims 1, 9, 13, 18, and 21-24 are independent claims.

Claim Objections under 37 C.F.R. 1.75

The Examiner's objections to claims 9, 10, 11, 12, 18, 19, 20, 21, and 23 as being substantial duplicates of claims 1, 3, 4, 8, 13, 15, 16, 22, and 24, respectively, are respectfully traversed.

Each of claims 1, 3, 4, 8, 13, 15, 16, 22, and 24 recites (in the body thereof of the independent claim) "a plurality of laser diodes", whereas none of claims 9, 10, 11, 12, 18, 19, 20, 21 and 23 recites same in the body thereof (only in the preamble). In the Office Action, the Examiner asserts that the Examiner is not giving patentable weight to the preamble of the claims. Accordingly, the respective scopes of the foregoing claims which are the subject of objection are different than the claims upon which the objections are based.

Withdrawal of the objections to claims 9, 10, 11, 12, 18, 19, 20, 21, and 23 is respectfully requested.

Claim Rejections under 35 U.S.C. 112(2)

Claims 1, 9, 13, 18, 21, 22, 23, and 24 are amended, taking the Examiner's comments into consideration. Withdrawal of the foregoing rejections is respectfully requested.

Claim Rejections under 35 USC 102/103

Stayt discloses a method and apparatus to sense laser array power and wavelength and reduce drift for wavelength selection and stabilization.

Eda discloses a wavelength stabilizing apparatus.

The combination of Stayt in view of Eda is an apparatus to sense laser array power and

wavelength and reduce drift for wavelength selection and stabilization, and to stablize the wavelength.

Neither of the foregoing references relied upon, either alone or in combination, discloses or suggests the following features of the present invention (using the recitation of claim 1 as an example, and recited in each of independent claims 1, 9, 13, 18, 21, 22, 23, and 24):

> "a control loop for controlling the temperatures of said plurality of laser diodes according to an output from said temperature sensor and temperature control conditions for said laser diodes to thereby control the oscillation wavelengths of said plurality of laser diodes; and
>
> means for compensating the temperature control conditions for said laser diodes other than the reference laser diode, according to a change in temperature control condition for said reference laser diode, wherein the reference laser diode is operated at temperatures lower than or equal to an ordinary temperature".

Moreover, dependent claims 2-8, 10-12, 14-17, 19, and 20 recite patentably distinguishing features of their own. For example, claim 2/1 recites ", wherein the oscillation wavelengths of said plurality of laser diodes are different from each other, and said plurality of laser diodes are selectively driven".

Withdrawal of the foregoing rejections is respectfully requested

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: July 24, 2003

By: _____

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the following claims:

1. (TWICE AMENDED) A light source device comprising:

a plurality of laser diodes comprising a reference laser diode;

a temperature sensor provided in the vicinity of said plurality of laser diodes;

a control loop for controlling the temperatures of said plurality of laser diodes according to an output from said temperature sensor and temperature control conditions for said laser diodes to thereby control the oscillation wavelengths of said plurality of laser diodes; and

means for compensating the temperature control conditions for said laser diodes other than the reference laser diode [selected from said plurality of laser diodes], according to a change in temperature control condition for said reference laser diode, wherein the reference laser diode is [normally operative only] operated at [a lower temperature] temperatures lower than or equal to an ordinary temperature.

2. (AS ORIGINAL) A light source device according to claim 1, wherein the oscillation wavelengths of said plurality of laser diodes are different from each other, and said plurality of laser diodes are selectively driven.

3. (AS ORIGINAL) A light source device according to claim 1, wherein said temperature sensor comprises a thermistor.

4. (AS ORIGINAL) A light source device according to claim 1, wherein said change in said temperature control condition for said reference laser diode comprises a result of comparison between an initial set temperature and a latest set temperature, whereby a deterioration of said temperature sensor reflects the compensation of said temperature control conditions of said laser diodes other than said reference laser diode.

5. (AS ORIGINAL) A light source device according to claim 4, wherein said reference laser diode is driven so as to become lower in temperature than said laser diodes

other than said reference laser diode.

6. (AS ORIGINAL) A light source device according to claim 1, wherein said plurality of laser diodes are arranged in an array, and said reference laser diode is positioned at an end of said array.

7. (AS ORIGINAL) A light source device according to claim 1, wherein said plurality of laser diodes are arranged in an array, and said temperature sensor is positioned near the center of said array.

8. (AS ORIGINAL) A light source device according to claim 1, wherein said control loop comprises an optical filter optically coupled to said plurality of laser diodes and having a transmittance substantially periodically changing with wavelength, and means for controlling the temperatures of said plurality of laser diodes so that the intensity of transmitted light through said optical filter becomes constant.

9. (TWICE AMENDED) A wavelength control device for a light source device having a plurality of laser diodes including a reference laser diode, comprising:

a temperature sensor provided in the vicinity of said plurality of laser diodes;

a control loop for controlling the temperatures of said plurality of laser diodes according to an output from said temperature sensor and temperature control conditions for said laser diodes to thereby control the oscillation wavelengths of said plurality of laser diodes; and

means for compensating the temperature control conditions for said laser diodes other than the reference laser diode [selected from said plurality of laser diodes], according to a change in temperature control condition for said reference laser diode wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

10. (AS ORIGINAL) A wavelength control device according to claim 9, wherein said temperature sensor comprises a thermistor.

11. (AS ORIGINAL) A wavelength control device according to claim 9, wherein said change in said temperature control condition for said reference laser diode comprises a result of comparison between an initial set temperature and a latest set temperature, whereby a deterioration of said temperature sensor reflects the compensation of said temperature control conditions of said laser diodes other than said reference laser diode.

12. (AS ORIGINAL) A wavelength control device according to claim 9, wherein said control loop comprises an optical filter optically coupled to said plurality of laser diodes and having a transmittance substantially periodically changing with wavelength, and means for controlling the temperatures of said plurality of laser diodes so that the intensity of transmitted light through said optical filter becomes constant.

13. (TWICE AMENDED) A light source device comprising:

a plurality of laser diodes comprising a reference laser diode;

a first temperature sensor provided in the vicinity of said plurality of laser diodes;

a second temperature sensor provided at a position becoming lower in temperature than a position where said first temperature sensor is provided when driving said plurality of laser diodes;

a control loop for controlling the temperatures of said plurality of laser diodes according to an output from said first temperature sensor and a control signal to thereby control the oscillation wavelengths of said plurality of laser diodes; and

means for compensating a detected temperature by said first temperature sensor according to a detected temperature by said second temperature sensor and according to a change in temperature control condition for the reference laser diode and outputting the control signal based on the detected temperatures and the temperature control conditions, wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

14. (AS ORIGINAL) A light source device according to claim 13, wherein the oscillation wavelengths of said plurality of laser diodes are different from each other, and said plurality of laser diodes are selectively driven.

15. (AS ORIGINAL) A light source device according to claim 13, wherein each of said first and second temperature sensors comprises a thermistor.

16. (AS ORIGINAL) A light source device according to claim 13, wherein said control loop comprises an optical filter optically coupled to said plurality of laser diodes and having a transmittance substantially periodically changing with wavelength, and means for controlling the temperatures of said plurality of laser diodes so that the intensity of transmitted light through said optical filter becomes constant.

17. (AS ORIGINAL) A light source device according to claim 16, wherein:

said second temperature sensor is provided in the vicinity of said optical filter;

said light source device further comprising means for controlling the temperature of said optical filter according to an output from said second temperature sensor so that the temperature of said optical filter is maintained constant.

18. (TWICE AMENDED) A wavelength control device for a light source device having a plurality of laser diodes including a reference laser diode, comprising:

a first temperature sensor provided in the vicinity of said plurality of laser diodes;

a second temperature sensor provided at a position becoming lower in temperature than a position where said first temperature sensor is provided when driving said plurality of laser diodes;

a control loop for controlling the temperatures of said plurality of laser diodes according to an output from said first temperature sensor and a control signal to thereby control the oscillation wavelengths of said plurality of laser diodes; and

means for compensating a detected temperature by said first temperature sensor according to a detected temperature by said second temperature sensor and according to a change in temperature control condition for the reference laser diode and outputting the control signal based on the detected temperatures and the temperature control condition, wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

19. (AS ORIGINAL) A wavelength control device according to claim 18, wherein

each of said first and second temperature sensors comprises a thermistor.

20. (AS ORIGINAL) A wavelength control device according to claim 18, wherein said control loop comprises an optical filter optically coupled to said plurality of laser diodes and having a transmittance substantially periodically changing with wavelength, and means for controlling the temperatures of said plurality of laser diodes so that the intensity of transmitted light through said optical filter becomes constant.

21. (ONCE AMENDED) A light source device comprising:

a plurality of laser diodes comprising a reference laser diode;

a temperature sensor provided in the vicinity of said plurality of laser diodes;

a control loop controlling the temperatures of said plurality of laser diodes according to an output from said temperature sensor and temperature control conditions for the laser diodes to thereby control the oscillation wavelengths of said plurality of laser diodes; and

a compensator compensating the temperature control conditions for said laser diodes other than the reference laser diode [selected from said plurality of laser diodes], according to a change in temperature control condition for said reference laser diode, wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

22. (ONCE AMENDED) A wavelength control device for a light source device having a plurality of laser diodes including a reference laser diode, comprising:

a temperature sensor provided in the vicinity of said plurality of laser diodes;

a control loop controlling the temperatures of said plurality of laser diodes according to an output from said temperature sensor and temperature control conditions for the laser diodes to thereby control the oscillation wavelengths of said plurality of laser diodes; and

a compensator compensating the temperature control conditions for said laser diodes other than the reference laser diode [selected from said plurality of laser diodes], according to a change in temperature control condition for said reference laser diode wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

23. (ONCE AMENDED) A light source device comprising:

a plurality of laser diodes comprising a reference laser diode;

a first temperature sensor provided in the vicinity of said plurality of laser diodes;

a second temperature sensor provided at a position becoming lower in temperature than a position where said first temperature sensor is provided when driving said plurality of laser diodes;

a control loop controlling the temperatures of said plurality of laser diodes according to an output from said first temperature sensor and a control signal to thereby control the oscillation wavelengths of said plurality of laser diodes; and

a compensator compensating a detected temperature by said first temperature sensor according to a detected temperature by said second temperature sensor and according to a change in temperature control condition for the reference laser diode and outputting the control signal based on the detected temperatures and the temperature control condition, wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.

24. (ONCE AMENDED) A wavelength control device for a light source device having a plurality of laser diodes including a reference laser diode, comprising:

a first temperature sensor provided in the vicinity of said plurality of laser diodes;

a second temperature sensor provided at a position becoming lower in temperature than a position where said first temperature sensor is provided when driving said plurality of laser diodes;

a control loop controlling the temperatures of said plurality of laser diodes according to an output from said first temperature sensor and a control signal to thereby control the oscillation wavelengths of said plurality of laser diodes; and

a compensator compensating a detected temperature by said first temperature sensor according to a detected temperature by said second temperature sensor and according to a change in temperature control condition for the reference laser diode and outputting the control signal based on the detected temperatures and the temperature control circuit, wherein the reference laser diode is [normally operative only at a lower temperature] operated at temperatures lower than or equal to an ordinary temperature.